AGREN®

PondBuilder

User Manual

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PondBuilder Introduction

PondBuilder will step you through the simple process of drawing a dam, watershed, flowline, and calculating a runoff curve number. If you choose not to calculate a runoff curve number, you will have the ability to enter your own.

Based on NRCS design criteria and your personal options, PondBuilder creates a dynamic spreadsheet that offers a wide range of pond options. At a glance, you can see a variety of pond sizes, pool depths, dam heights, and pipe sizes. Each option lists an associated cost for the pond. Options can then be sorted and filtered various ways based on your needs.

Every report contains a complete cost estimate based on county derived costs and an aerial photo showing dam location, and the size of the permanent and temporary pool.

With PondBuilder, all options are developed using high-resolution digital elevation models derived from LiDAR data.

Initial Subscriber Login

When your account is created by Agren, the subscriber for your account will receive an activation email containing an activation link. The activation link is valid for 30 days. If 30 days has elapsed and the link has not been used, you will need to contact admin@agrentools.com to have a new activation link sent.

When the subscriber clicks the activation link, they will be prompted to choose a password (see following pages for password requirements).

Enter and confirm your chosen password and click ***Activate My Account***. You will be redirected to the login screen, where you will need to log in again with your username (typically your email address) and password.

Executing the End User License Agreement (EULA)

As the Subscriber, you must execute the End User License Agreement (EULA) before accessing any part of the tools. Click on ***Click here to execute the EULA***. Read the EULA and if you agree with the terms, click ***I Agree*** to execute the EULA.

The current copy of the EULA can always be found by clicking ***EULA*** in the footer of the login system.

Managing My Users

Part of the responsibility of the subscriber is to manage the users assigned to their license. Initially, this requires setting up users that can access your license.

Upon executing the EULA, the subscriber will be redirected to the Manage My Users page. The Manage My Users page contains three sections, Add New User, Search & Add Existing User, and Edit Licensed Users.

To add a new user, type in the user's first name, last name, email and company/agency under the grey bar Add New User. The user name will automatically populate when you enter the email address. Clicking ***Add New User*** will add the user to the license you are logged in to and email them an activation link. (If the user needs to be added to another license you are the subscriber for, you must log into that license and repeat the steps.)

If you would like to add a user that is an existing user on another license, you may enter their user name (typically their email address) under the grey bar Search & Add Existing User. Clicking ***Add Existing User*** will add the user to the license you are logged in to.

It is the responsibility of the subscriber to keep their license information current as employees are hired or terminated. To remove a user from a license, click ***Remove From License*** to the right of the user's name under the grey bar Edit Licensed User.

To edit first name, last name, or company, click on the user's name in the first column of the Edit Licensed User table. If you need to change a user's email address or user name, contact

admin@agrentools.com. If a user's activation link has expired, you can also send another activation link by clicking ***Resend activation email*** from the Manage Individual User page.

A link to Manage My Users can be found in the footer of the login screens.

Initial User Login

When your subscriber accepts the EULA and sets up the users for a license, activation emails will be sent to each user. The email contains an activation link that is valid for 30 days. If 30 days has elapsed and the link has not been used, you will need to contact your subscriber to have a new activation link sent.

When you click on the activation link, you will be prompted to choose a new password (see below for password requirements).

Enter and confirm your chosen password and click ***Activate My Account***. You will be redirected to the login screen, where you will need to login again with your username (typically your email address) and password.

For subsequent logins, go to www.agrentools.com. Click on ***LICENSED USER LOGON*** in the top right corner of your screen.

Password Requirements

Passwords must be at least 12 characters in length and may only be repeated once every 24 passwords. In addition, passwords must contain characters from three of the following four categories.

- English uppercase characters (A - Z)
- English lowercase characters (a - z)
- Base 10 digits (0 - 9)
- Non-alphabetic characters (e.g., !, $, #, %)

Passwords must be changed every 180 days. Seven days before the expiration of your password, you will receive an email notifying you that your password will expire and provide you with instructions on how to change your password. On the day your password expires, you will receive an email notice that your password has expired with a link to the initial login screen to reset your password.

Resetting Your Password

After three incorrect login attempts, your account will be locked for 15 minutes. After 15 minutes, you may retry your account, or reset your password.

To reset your password, click ***Forgot your password?*** on the login screen. A Forgot Password screen will come up. Enter your user name (typically your email) and click ***Submit*** to send an email with a link to reset your password.

When you click the link in the password reset email, you will be redirected to a Reset Password screen. Choose a new password following the requirements above, and confirm. Once your password is updated, you will be prompted to log in again with your user name and new password.

Managing My Info

To edit your first name, last name, or company, click on your user name (typically your email address) and then click Manage My Info in the footer of the login screens. If you need to change your email address or user name, contact admin@agrentools.com.

Choosing a License and Tool

From the login screen, choose the license you want to access from the drop down list.

To access Agren's conservation planning tools, click on the tool you would like to use below the license selection.

Customer Support

The footer of every login screen contains a link to customer support.

If you experience even the smallest problem while using Agren's conservation planning tools, please let us know! We do our best to get you answers within the hour, 8am to 5pm CST Monday through Friday.

There are three ways to contact Agren customer support:

1. **Click Find a Bug? when using the tools**

   The Find a Bug? icon (just to the left of Enable Help on the top of your map) records information about your session, as well as a screen shot, and pops up a window where you can type your question or report a bug. This is the best way to report bugs or ask questions because we receive the most information to help diagnose your problem. Please be as descriptive as possible in explaining the problem you are experiencing. Occasionally, we might also ask for a copy of the session you are working on.

2. **Email support@agrentools.com**

   Please be as descriptive as possible in explaining the problem you are experiencing.

3. **Call (712) 792-6248**

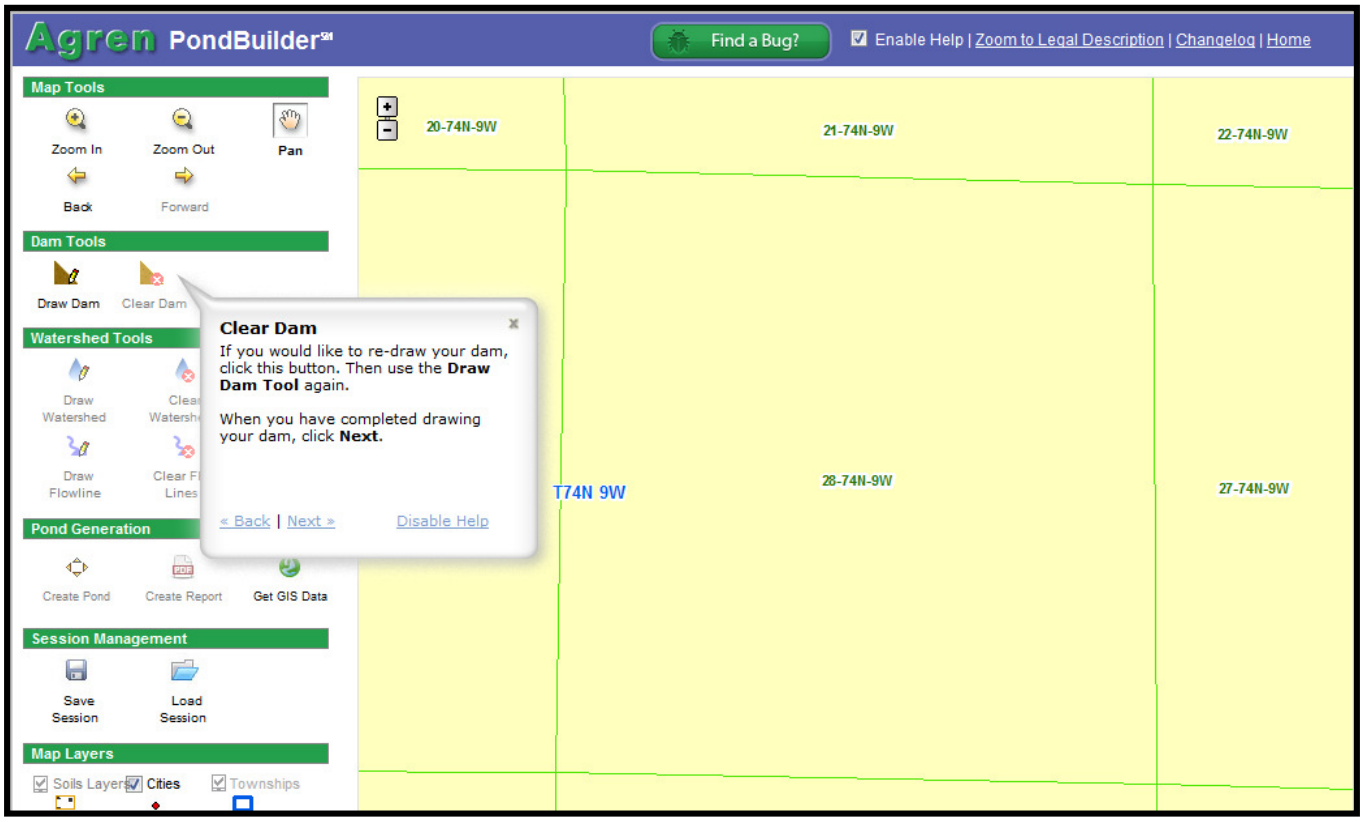
Enabling and Disabling Help

PondBuilder is equipped with a help menu that steps you through the process of creating a pond. To enable help, click on the box to the left of ***Enable Help*** on the blue bar at the top of the page. When this box is checked, ***Enable Help*** will be turned on. A check mark in the box indicates that the help is on. To move through the step-by-step process, simply click ***Next>>*** in the help window to advance to the next help screen.

Click on Next>> in the help window to advance to the next help screen.

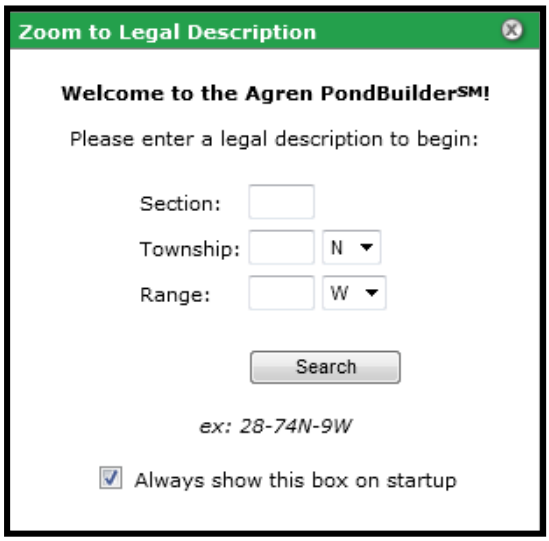
At any time, you may temporarily close the help window by clicking the "***X***" in the top right corner of the help window. When you click on another icon, the help menu will reappear.

To disable the help menu, uncheck ***Enable Help*** in the blue bar on the top of your screen or click ***Disable Help*** in the bottom right of the help window.



Zooming to Pond Location

The location of the proposed pond is the first information that is requested. Zoom in far enough that you can easily distinguish the contour lines, but still see the entire pond watershed on the screen. There are two methods to zoom to the desired pond location.



If the legal description is known, the Zoom to Legal Description box easily zooms you into the correct location

Method A

Enter a legal description (section, township, and range) and click ***Search***. If the box shown at the left does not appear upon program startup, click ***Zoom to Legal Description*** in the upper right hand corner of your screen.

Click on the ***Imagery*** check box in the bottom left corner of the screen to turn on the aerial photo map layer.

Once you have zoomed to the appropriate section, you may zoom in further one of five ways.

1. Click and hold the left mouse button on one corner of the area of interest. Drag the pointer to the opposite corner drawing a rectangle and release.
2. Using the scroll bar/wheel on your mouse, roll forward to zoom in, roll backward to zoom out.
3. You may also click on ***Zoom In*** or ***Zoom Out*** in the map tools to the left of the map and then click once on the area of interest on the map. This way is not recommended because there is no control over the zoom. Frequently this command zooms in too far.
4. Click the ***+ or –*** in the top left corner of the map to zoom in and out.
5. Press the ***+ or –*** on the key board of your computer.

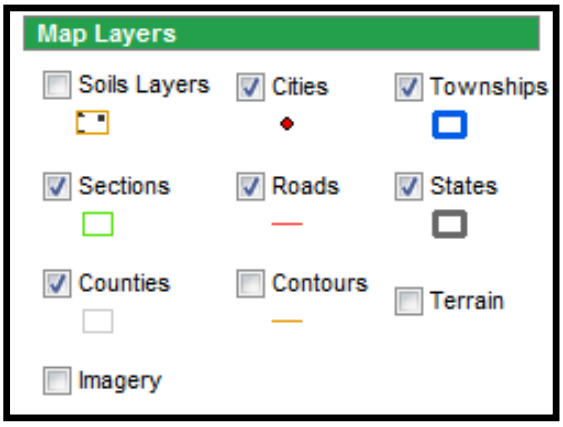
If the Imagery box is in grayed out, you have not zoomed in far enough to use Imagery yet. Zoom in until the Imagery box turns black. (This applies to the Contours and Terrain buttons as well.)

Method B

Click on ***Pan*** (located to the right of the Zoom In and Zoom Out tools). Then, click and drag the map to the desired location and zoom in or out with one of the five methods described above.

Map Layer Options

In the bottom left hand corner of your screen, you will find check boxes that allow different viewing options (shown on the right). Check the box next to the map layer(s) you prefer to work with when planning your pond.



Map Layer Options

Imagery provides you with an aerial photo of the area selected. The Imagery layer is available in areas less than 25 miles wide.

Contours inserts two-foot contour lines. The Contour layer is available in areas less than two miles wide.

Terrain inserts hill shading. The Terrain layer is available in areas less than two miles wide.

You may use any combination of imagery, contours, and terrain layers at the same time. However, if you have imagery and terrain layers on at the same time you will only see the terrain layer.

Drawing your Dam Line

Determine where you want the dam and select the ***Draw Dam*** tool.

For a straight dam, click once on one side of the valley where you would like your dam to begin. Then, double-click on the other side of the valley where you would like the dam to end.

A dam with a curve in it can be made by clicking once on any number of points between the beginning and end of the dam. As above, double-click to complete the dam.

If the dam is not where you want it, click the ***Clear Dam*** button and start over.

If you are using Internet Explorer or FireFox, the right click button on the mouse removes points you created when you drew the dam, flow line, watershed, or when you cut the watershed. All other operations use the left click.

Drawing your Watershed

It is easiest to show the entire watershed in the viewing frame before you begin to draw the watershed. While drawing the watershed, you can use the + or – in the view, arrow keys on your keyboard, or the scroll bar on your mouse to zoom. While drawing the watershed, the Zoom In and Zoom Out map tools are disabled.

> ***If you make a mistake drawing the dam, watershed, or flow lines, simply click the Clear Dam, Clear Watershed, or Clear Flow Lines tool to erase the drawing.***

Click the ***Draw Watershed*** tool. Begin drawing the outline of the watershed. The stretchy polygon line for the watershed boundary is attached to both ends of the dam line so the first and last click point must be upslope from the dam line. As you follow the boundary of the watershed, click every time you change direction. You must start on the same side you ended the dam or your polygon will twist over itself and give you an incorrect watershed.

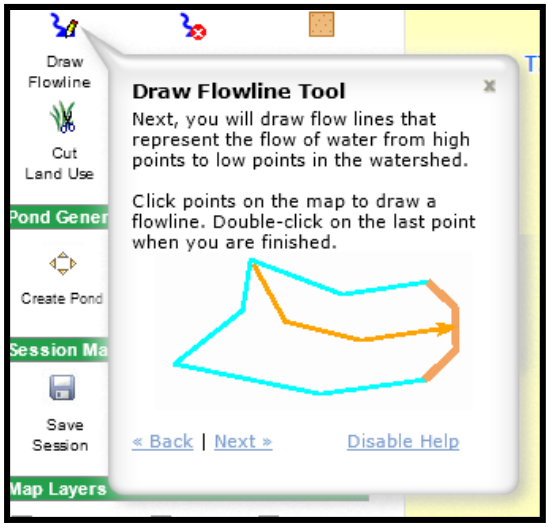
When you have a polygon drawn around your watershed, double click near where you began the dam to end the watershed drawing process.

Drawing your Flowline

A flowline is the distance water travels as a raindrop from site of impact to the dam. Flowlines are used to determine the longest flow path of water, or the greatest distance that water flows, from the top of the watershed to the dam.

The flowline should follow the longest flow path of water from the top of the watershed down to the dam. If you are uncertain of the longest flow line, you can draw as many flow lines as you want. The longest flowline will be automatically selected by PondBuilder.

Click on the ***Draw Flowline*** tool. Click once outside the top of the watershed and follow the flow of the water downhill, clicking every time you change direction. This is made easier by viewing the contour map. End the flow path by double clicking just past the dam line.


Draw Flowline
Cut Land Use
Pond Gener
Create Pond
Session Ma
Save Session
Map Layers
Draw Flowline Tool
Next, you will draw flow lines that represent the flow of water from high points to low points in the watershed.
Click points on the map to draw a flowline. Double-click on the last point when you are finished.
« Back | Next »
Disable Help

The Draw Flowline Help Box visually depicts how to draw a flowline.

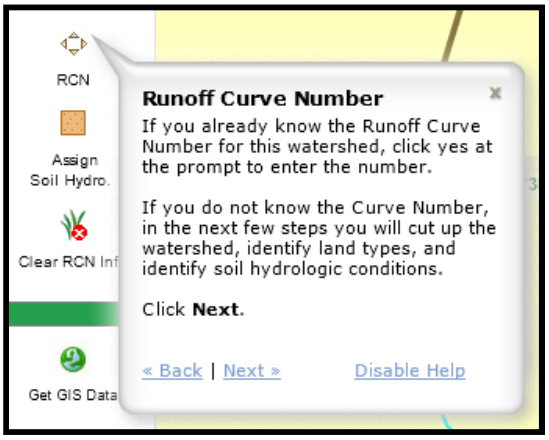
Any part of the flowline that is outside the watershed, or below the dam line will be removed automatically.

Entering the Runoff Curve Number (RCN)

PondBuilder can calculate a runoff curve number automatically, or you may enter it manually.

Click on ***RCN*** and follow the prompts. If you already know your runoff curve number, you may enter it at the prompt and then skip to ***Create Pond***.

To allow PondBuilder to calculate your runoff curve number, follow the instructions below to assign hydrologic soil groups, cut land use, and assign land cover.


RCN
Assign Soil Hydro.
Clear RCN Inf
Get GIS Data
Runoff Curve Number
If you already know the Runoff Curve Number for this watershed, click yes at the prompt to enter the number.
If you do not know the Curve Number, in the next few steps you will cut up the watershed, identify land types, and identify soil hydrologic conditions.
Click Next.
« Back | Next »
Disable Help

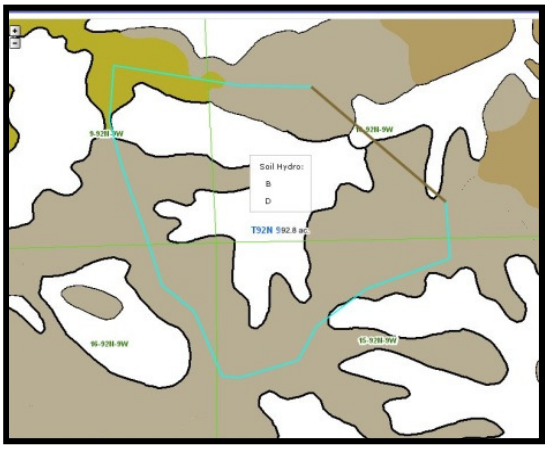
The Runoff Curve Number Help Box allows you to skip ahead if you already know your RCN value.

Assigning Soil Hydrologic Groups

To speed up processing, you can turn off the contour and terrain layers. You will need only the imagery layer during the remaining steps. Soil polygons can be assigned dual hydrologic groups. Soil polygons that are white on the map are assigned dual hydrologic groups (A/D, B/D, or C/D). The first letter in a dual hydrologic group represents drained areas and the second letter represents undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes. Existing water bodies at the time of soil hydrologic group assignment could have letters A, B, C, or D. The choice of which of these four letters is used is up to the user.

Left click on each of these polygons and choose the hydrologic group that best represents that polygon. In the case of existing basins, you will have a choice of all four letters. Choose the letter that best represents the pond.

All the white polygons within the watershed must be assigned a letter before a runoff curve number can be calculated.



Left click to assign soil hydrologic groups to all white polygons. If your watershed does not contain any white areas, you may skip this step.

Cutting and Assigning Land Covers

Differentiate land cover types in the watershed by clicking the ***Cut Land Covers*** tool. Cut up the watershed until all of the cover types are separated.

Cut up the watershed by drawing a polygon around each different cover. First, click on the outside of your watershed polygon. As you follow the edge of your cover type, click every time you change direction and end by double clicking after you have crossed a line.

To draw a polygon around a cover type in the center of the watershed, click on the start point and follow the edge of the cover type. When you get back to the beginning, cross your beginning point and double click to end the polygon.

Click on the ***Assign Land Cover Desc*** tool. Each region in your watershed must be assigned a cover description (cover type – treatment and hydrologic condition).

To assign a cover type, hold the mouse arrow over a polygon. Left click once on the polygon and a menu of descriptions will be displayed. Next, select the most appropriate cover type for that polygon.

Continue this process until all polygons are labeled. PondBuilder will not allow you to move to the next step until you have assigned at least 95% of the watershed a cover type.

If you have not intersected another line both at the beginning and at the end of your drawing, the polygon will not be developed. You may intersect the watershed boundary, another cover type, or the current cover type on which you are working.

Straight Row [Poor]
Straight Row [Good]
Straight Row + Crop Residue Cover [Poor]
Straight Row + Crop Residue Cover [Good]
Contoured [Poor]
Contoured [Good]
Contoured + Crop Residue Cover [Poor]
Contoured + Crop Residue Cover [Good]

A variety of cover types are available for Cultivated Agricultural Lands, Non-Cultivated Agricultural Lands, as well as Urban Areas.

Creating a Pond

You are now ready to create your pond. Click on the ***Create Pond*** tool to the left of your map under the green heading Pond Generation.

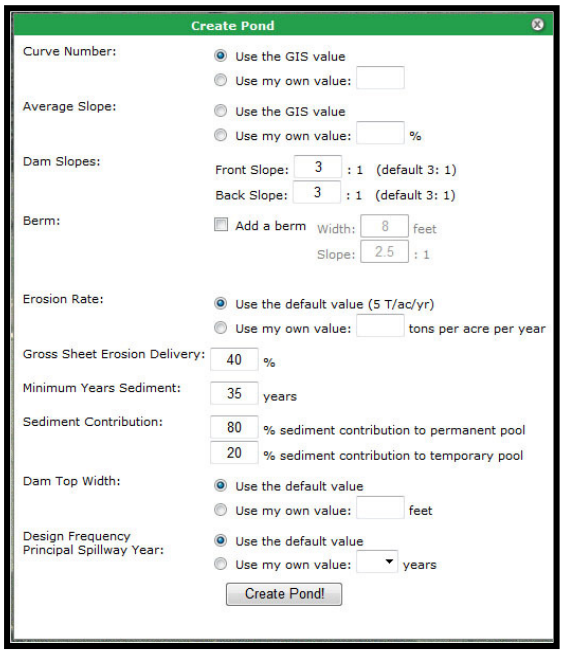
The Create Pond dialog box will pop up. The numbers in the dialog box automatically default to numbers calculated by PondBuilder. However, you may override them by clicking ***Use my own value*** and typing in your preferred value. Below is an explanation of each default value.

Curve Number: If you used PondBuilder to calculate the Runoff Curve Number the first box will be selected using the program value. If you entered your own Runoff Curve Number, the second box will be selected with the value you entered.

Average Slope: PondBuilder calculates the average slope using the ArcGIS slope tool, rather than using soil maps.

Dam Slopes: The default value for the slope ratio is set by the state. If you enter a value that exceeds a state minimum or maximum slope, a warning message will appear in the Create Pond dialog box.

Berm: If a berm is desired, click ***Add a berm***. All berms are a consistent width along the front slope of a dam. A berm may be added by default according to your state requirements.



Default rates are entered for your state for the bulleted items below. PondBuilder does not warn you if you enter a value that varies from your state standards. Please be cautious when overriding these values.

- **Erosion Rate**
- **Gross Sheet Erosion Delivery**
- **Minimum Years Sediment**
- **Sediment Contribution**

Dam Top Width: PondBuilder calculates the minimum dam top width based on dam height. A wider figure may be entered, but if too small of a width is entered the program will default back to the minimum value.

Design Frequency Principal Spillway Year: The user can select a principal spillway year greater than the value calculated by PondBuilder in order to increase the size of a dam.

Once all desired values have been selected, click ***Create Pond!*** at the bottom of window.

Using the Pond Selection Table

After a few moments the Pond Selection table will appear. This table will list all possible scenarios of ponds for this dam site. The table will give you the Pond Size, Pond Depth, Dam Height, Drainage to Pond Area Ratio, Pipe Size, Depth Fill Over Pipe, and Base Cost for all pond options.

There may be many pages of available ponds for you to view in the Pond Selection Table.

Pond Selection (Click this bar to show/hide the list of ponds)

[Filter These Results]

Pond Size (acres)	Pond Depth (feet)	Dam Height (feet)	Drainage:Pond Area Ratio	DNR Permit Required	Pipe Size (inches)	Depth Fill Over Pipe (feet)	Base Cost*	
19.58	16.0	19.5	7 : 1	Yes	10 - HCMP	7.1	$21,620	View Pond
19.58	16.0	19.5	7 : 1	Yes	10 - SSP	7.1	$21,960	View Pond
19.58	16.0	20.7	7 : 1	Yes	18 - ACMP	8.5	$25,740	View Pond
19.58	16.0	19.8	7 : 1	Yes	12 - ACMP	7.5	$23,800	View Pond
19.58	16.0	20.3	7 : 1	Yes	15 - ACMP	8.0	$26,460	View Pond
19.58	16.0	19.5	7 : 1	Yes	10 - PVC	7.1	$22,130	View Pond
19.58	16.0	19.8	7 : 1	Yes	12 - PVC	7.5	$23,460	View Pond
19.58	16.0	21.0	7 : 1	Yes	20 - SSP	8.9	$29,240	View Pond
19.58	16.0	19.8	7 : 1	Yes	12 - SSP	7.5	$23,280	View Pond
19.58	16.0	20.7	7 : 1	Yes	18 - SSP	8.5	$26,980	View Pond
18.56	15.5	21.1	7 : 1	Yes	24 - ACMP	9.5	$30,250	View Pond
18.56	15.5	19.0	7 : 1	Yes	10 - HCMP	7.0	$20,400	View Pond
18.56	15.5	19.0	7 : 1	Yes	10 - SSP	7.0	$20,730	View Pond
18.56	15.5	19.3	7 : 1	Yes	12 - ACMP	7.4	$22,540	View Pond
18.56	15.5	19.8	7 : 1	Yes	15 - ACMP	7.9	$25,140	View Pond

1 2 3 4 5 6 7 8 9 10 ...

* Base Cost includes Dam Fill (with berm if applicable) and Core Trench Backfill, Core Trench Excavation, and Principal Spillway Pipe costs.

Grubbing, Seeding, and Fencing costs will be added later in this estimate.

Costs: [Change] (These are the standard costs for Carroll County, Iowa)

Dam Fill (per cubic yard): $ 2.71 Seeding (per acre): $ 50.01 Fencing (per foot): $ 2.83

Trench Fill (per cubic yard): $ 2.65 Grubbing (per acre): $ 740.33

Average base costs have been provided by your county. These costs may be overridden if necessary at the bottom of the Pond Selection window. Simply click ***Change*** located to the right of Costs: to enter your own values.

Sorting and Narrowing your Results

The Pond Selection table can be sorted in many ways. You can sort each column least to greatest, or greatest to least, by clicking on the heading of each column.

The pond results also can be narrowed by clicking ***Filter These Results*** at the top of the table.

After clicking, a Filter Options window will appear.

To filter by Pipe Type, click the drop down arrow in the top left of the window and choose Annular Corrugated Metal, Helical Corrugated Metal, Corrugated Metal, PVC, or Smooth Steel Pipe.

The drop down box below Pipe Type allows you to filter by Pond Area, Pond Depth, Drainage to Pool Area Ratio, or Pipe Size. Make a selection and then enter the low range first box and high range in the second box.

You may also click ***Show only least expensive ponds for each pool height*** to filter to the least expensive options for every 0.5 foot of elevation.

Once you have picked your options, click ***Filter!*** All potential pond(s) that meet your criteria will be sorted and displayed in the Pond Selection Table.

Click ***Reset*** to return to the original unfiltered table.

Viewing a Pond

Once the desired pond is selected, you can display an aerial view of that pond. To create an aerial view of the pond, click on ***View Pond*** in the right hand column of the table. A view of the pond and flow path will be displayed.

You can select another pond to view by returning to the Pond Selection Table. To return to the table, place the curser on the green bar at the top of the pond view. When the curser is placed on the green bar, a down arrow will appear. Click on the down arrow and you will return to the Pond Selection Table.

To return the Pond Selection Table after choosing a pond, click on the small down arrow on the top right of the green Pond Selection menu bar.

Printing and Saving Reports

Several versions of reports are available to print and/or save. There are separate reports for both the landowner and the planner. The Planner's Report offers more comprehensive information than the Landowner's Report.

To create a report, first zoom to the desired map view and turn on/off map layers that you want to appear in the report maps. The image you see on the screen will be the image printed in all the reports. Then, click on the ***Create Report*** button.

Saving a report is the best way to document what was provided to the landowner.

Enter data into the Additional Report Details dialog box. Then, select the reports you want to save and/or print and click on ***Create Report!*** at the bottom of the dialog box.

Choose whether you would like to open or save the file. (If the report is opened, it may still be saved after the report has been opened or printed.)

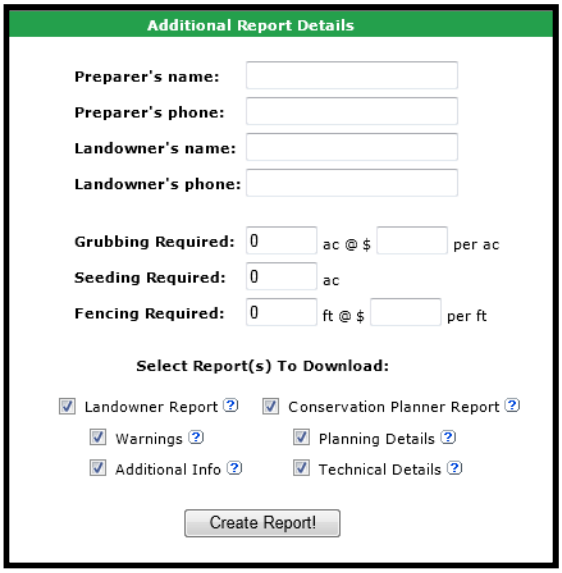
An Adobe Acrobat (PDF) report will be created. If both the Landowner's Report and the Planner's Report are selected, they will appear in one continuous PDF File. To print only one report, you will need to choose File, Print and indicate the page numbers you would like to print.

The Landowner's Report will include:

- Disclaimer Statements
- Aerial View of the Pond
- Basic Pond Information and Estimated Cost

The Conservation Planner's Report includes all of the above and:

- Detailed Pond Information and Estimated Cost
- Pond Planning Details
- Earthwork Dimensions
- Runoff Curve Number Calculations
- Technical Calculations

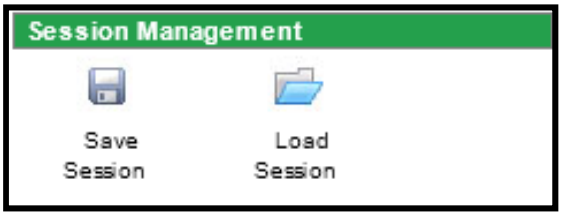


Additional expenses of grubbing, seeding, and fencing may be added into the above window.

Saving and Loading a Session

To save a session so you can return to it at a future point in time, choose the ***Save Session*** tool under Session Management menu option on the left hand side of the screen. Give the file a descriptive name and choose a location to save it. The session will be saved as a .pnd file.

All information will be saved except the final pond that you choose for your report. The Pond Selection table will still be available. However, it is important that you save a copy of the pond report so you will be able to identify which pond you chose.



Saving and Loading a session

To load a previous session, simply choose the ***Load Session*** tool under Session Management menu option on the left hand side of the screen and navigate to the .pnd file you would like to load.

Loading a previous session allows you access to other ponds from the Pond Selection table and allows you to alter values from the previous pond.

Using the GIS Data Function

The GIS Data function allows information to be saved as an ArcGIS layer and a Microsoft Access file.

To save the GIS Data, click the ***GIS Data*** function under Pond Generation from the menu options on the left hand side of the screen. A zip file containing an ArcGIS layer file (.lyr) and a personal geodatabase file (.mdb) will be saved. The layer file and the personal geodatabase file can be added directly into ArcGIS. From ArcGIS, these layers can be downloaded an AutoCAD program or a GPS unit.

Get GIS Data

Notes:

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